where it is desired not only to shade a diseased eye, but also to protect its nerves from strong light admitted by the sound eye. When not only coloured light but a certain degree of darkness is required, this can be readily and delicately graduated by employing shades of different depths of colour.

6. Masks of gelatine paper for protecting the eyes of travellers against the glare of snow-fields and of sandy deserts.

III. "On the Theory of Definite Integrals." By W. H. L. Russell, Esq., B.A. Communicated by A. Cayley, Esq., F.R.S. Received October 30, 1854.

I propose in the following paper to investigate some new methods for summing various kinds of series, including almost all of the more important which are met with in analysis, by means of definite integrals, and to apply the same to the evaluation of a large number of definite integrals. In a paper which appeared in the Cambridge and Dublin Mathematical Journal for May 1854, I applied certain of these series to the integration of linear differential equations by means of definite integrals. Now Professor Boole has shown, in an admirable Memoir which appeared in the Philosophical Transactions for the year 1844, that the methods which he has invented for the integration of linear differential equations in finite terms, lead to the summation of numerous series of an exactly similar nature, whence it follows that the combination of his methods of summation with mine, leads to the evaluation of a large number of definite integrals, as will be shown in this paper. It is hence evident that the discovery of other modes of summing these series by means of definite integrals must in all cases lead to the evaluation of new groups of definite integrals, as will also be shown in the following pages. I then point out that these investigations are equivalent to finding all the more important definite integrals whose values can be obtained in finite terms by the solution of linear differential equations with variable coefficients. Again, there are certain algebraical equations which can be solved at once by Lagrange's series, and by common algebraical processes; the summation of the former by means of definite

ntegrals affords us a new class of results, which I next consider. A continental mathematician, M. Smaasen, has given, in a recent volume of Crelle's Journal, certain methods of combining series together which give us the means of reducing various multiple integrals to single ones. The series hitherto considered are what have been denominated "factorial series;" but, lastly, I proceed to show that analogous processes extend to series of a very complicated nature and of an entirely different form, and for that purpose sum by means of definite integrals certain series, whose values are obtained in finite terms in the "Exercices des Mathématiques" by means of the Residual Calculus. The total result will be the evaluation of an enormous number of definite integrals on an entirely new type, and the application of definite integrals to the summation of many intricate series.

November 30, 1854.

Anniversary Meeting. A Report of the Proceedings will appear in a future Number.

December 7, 1854.

Colonel SABINE, V.P., in the Chair.

The Chairman announced that the President had appointed the following noblemen and gentlemen Vice-Presidents for the ensuing year:—

The Earl of Rosse, K.P., M.A.
Colonel Sabine, R.A.
Sir Benjamin Brodie, Bart.
Thomas Bell, Esq.
Charles Darwin, Esq., M.A.
Charles Wheatstone, Esq.

Robert Hunt, Esq., was admitted into the Society.